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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/690,921

10/21/2003

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60129 (71987)

6893

7590

04/05/2005

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EXAMINER

CLARK, SHEILA V

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/690,921

Applicant(s)

LIN ET AL.

Examiner

S. V. Clark

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 5-12, 17, 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Toy et al ('576).

Toy et al shows a substrate 10 having chip 16 disposed on the top surface and electrically connected to the substrate by a plurality of conductive elements 14 (i.e. bumps). A heat sink 20 (formed of thermally conductive materials) is show on the top surface of the chip where the heat sink is shown to have a flat portion attached to the chip and a support portion 22 (shoulders) extending from the flat portion to the substrate and a bonding portion (shown at 29) extending from the support portion. Said bonding portion is formed with a slot 29 formed at a corner. The bonding portion (is not attached to the substrate before the addition of the adhesive material applied between the bonding portion and top of the substrate) and is therefore shown to expose the top surface of the substrate before application of the adhesive. An adhesive 23 is shown formed between the bonding portion of the heat sink and the top of the substrate and filled in the slot and a plurality of solder balls 32 (can be BGA (see col. 4, line35)) are shown on the bottom of said substrate 10.

Said adhesive may be formed of many types of adhesive materials such as elastomers (col.1, line 16) and solder (col. 8, line 25).

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Use of solder 60 is also taught. An adhesive material 26 is shown filled solder ball gaps. And said heat sink is shown attached to said chip via adhesive 28 (col. 6, thermal paste). The shapes of the slots are also shown.

L-shaped slot is shown in figures 3 and 7, a taper shape in figure 3 and a stepped shape is shown in figure 6.

The claims, such as claim 8 contain method of making characteristics (i.e. stamping) given no patentable weight in determining the patentability of the final device structure.

Note that a *Aproduct by process* claim is directed to the product per se, no matter how actually made, *In re Hirao* 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessman*, 180 USPQ 324; *In re Avery*, 186 USPQ 161 and *In re Marosi et al*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in *Aproduct by process* claims, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in *Aproduct by process* claims or not.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toy et al ('576).

Toy et al teaches that the substrate may be made of plastic material which is deemed to suggest use of conventional materials well known in this art such as polyimide. It is also clear that as the slot is used for attachment purposes, other shapes

could be utilized which would render the same attachment benefit such as those recited in the claims.

Claims 1-18 are rejected.

Applicant's arguments filed 1-24-05 have been fully considered but they are not persuasive. Toy et al is deemed to teach the features of the invention in so far as they are claimed substantially item for item. Applicant argues that the reference to Toy fails to show an amended feature to the claims, which recites in part, a slot formed through a corner of the bonding portion of a heat sink to expose the surface of the substrate. This slot is disclosed to be shown in figures 1 and 2 of the instant invention.

This or these slots are shown in the instant drawings in figures 1 and 2 and as formed through the heat sink bonding portion (if looking from a top view) and exposing the top surface of the substrate.

This feature however as claimed may have varying looks. Toy also shows the corners of his heat sink bonding portion having slots formed through the corner. There is a gap formed between slotted corner and the substrate, which exposes the top surface of the substrate or allows the top surface of the substrate to be exposed.


This language in the claims must be expressed more specifically so that what is seen in figure 2 is the only structure that can be implied from what is recited. A slot further is defined broadly and can also have varying characteristics and has not been recited in the claims as a through hole.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to S. V. Clark at telephone number (571) 272-1725.



S. V. Clark
Primary Examiner
Art Unit 2815

April 1, 2005